

The invention provides a nanostructure including an anodized film including nanoholes. The anodized film is formed on a substrate having a surface including at least one material selected from the group consisting of semiconductors, noble metals, Mn, Fe, Co, Ni, Cu and carbon. The nanoholes are cut completely through the anodized film from the surface of the anodized film to the surface of the substrate. The nanoholes have a first diameter at the surface of the anodized film and a second diameter at the surface of the substrate. The nanoholes are characterized in that either a constriction exists at a location between the surface of the anodized film and the surface of the substrate, or the second diameter is greater than the first diameter.